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ABSTRACT

This document consists of a sample curriculum model for grade 1 mathematics based on the 1998 Arkansas State Mathematics Framework. The document is divided into five sections: (1) Number Sense, Properties, and Operations; (2) Geometry and Spatial Sense; (3) Measurement; (4) Data Analysis, Statistics, and Probability; and (5) Patterns, Algebra, and Function. Within each section the standards are exemplified and articulated by benchmarks, suggested assessments, and possible strategies and activities for teaching the standard. A blackline master checklist is included as an appendix. (MM)

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SAMPLE CURRICULUM MODEL

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GRADE 1

based on the 1998 Arkansas State Mathematics Framework
Arkansas Department of Education, 1998

SE 030 844

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Grade Level_1_

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.1 Demonstrate number sense (concepts of counting, grouping, and place value) using manipulatives.	Students will write numerical symbols related to sets which are represented using manipulatives. Students will count forward from 0-100 by ones, twos, fives, and tens. Students will demonstrate place value by identifying ones, tens, and hundreds.	. Teacher observation . Peer and self evaluation . Teacher-made tests . Student constructed number books . State-wide tests . Perform-ance	. Use concrete objects to represent numbers, (Ex. Students use buttons to show how many is ten.) then write the numerical symbol for the number of objects in the set. . Each student illustrates a set of items to represent an assigned number. The assigned number is recorded on the page with the illustration(s). The pages are then compiled in numerical order to create a number book. . Count a set of 100 objects taking 2 at a time. . Whole class as a chorus, count to 100 by fives and tens. . Count number of steps needed to move from classroom to another place in the school. . Celebrate the 100th day of school. . Participate in counting songs and rhymes. . Read: Demi's Count the Animals One-Two-Three by Demi; Deep Down Underground

			by Dunrea, Olivier; Count and See by Hoban, Tana; One Hunter by Hutchins, Pat; Whale Song: A Celebration of Counting by Johnston, Tony; Animal Numbers by Kitchen, Bert.
SLE NPO.1.2 Develop meaning for the operations (e.g., add, subtract, multiply, and divide) by modeling and discussing a variety of problem situations.	Students will discuss and model (concretely, pictorially, and symbolically) problem situations involving basic addition to sums of 18 and subtraction (takeaway, counting on/missing addend, comparison).	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Teacher-made test . Demon-stration	. Use concrete objects to represent numbers. Combine the objects (or remove some of the objects) to form a new set. Count the number of objects in the new set and determine if addition or subtraction was represented. The representation is then written symbolically. . An example of a problem situation involving similar procedures is, orally and in a written complete sentence, communicated. (Also N1.4) . Students are given a sheet of ten addition or subtraction problems and are instructed to work them with or without manipulatives. If manipulatives were not used, then they are used to check the answers.

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Grade Level_1_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.3 Apply and master counting, grouping, place value, and estimation.	Students will apply and master counting forward from 0-100 by ones, twos, fives, and tens. Students will apply and master place value in the ones, tens, and hundreds places. Students will estimate the number of objects in a set of less than 100 items using various strategies.	. Teacher observation . Peer and self evaluation . Checklist . Teacher-made test . State-wide tests . Perform-ance	. See NPO.1.1 . Students will estimate the number of students in two first grade classrooms.
SLE NPO.1.4 Solve problems using terminology and symbols of operations (e.g., add, subtract, multiply, and divide).	Students will concretely, pictorially, and symbolically represent problem solving situations involving basic addition and subtraction.	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Anecdo-tal record . State-wide tests . Writing	. See NPO.1.2 . Students are given a simulation of a penny (play penny) and are reminded a penny is equal to one cent and they are shown how to write one cent using the cent sign. They are then given a simulation of a dollar bill (play bill) and are reminded a dollar bill is equal to one dollar and are shown how it is written using the dollar sign. Students are given many pennies and one-dollar bills and are asked to count them and write the amount using symbols.

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Grade Level 1

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.5 Demonstrate competency of operations (e.g. add, subtract, multiply, and divide) using mental math and technology.	Students will demonstrate competency with basic addition and subtraction facts (to sums of 18) using mental math and technology.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . State-wide tests . Teacher-made test . Performance	. Explore addition and subtraction using calculators. . Set up a computer center with appropriate software for student use. (Ex. Millie's Math House by Edmark or Math Keys by Houghton Mifflin) . Show an applicable video. . Play games that enhance mental math, such as "Around The World"
SLE NPO.1.6 Use manipulatives to demonstrate and compare rational numbers/fractions (e.g., find simple parts of a whole).	Students will concretely, pictorially, and symbolically demonstrate and compare fractions as part of a whole using the fractions 1/2, 1/3, and 1/4.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Teacher-made test . State-wide tests . Demonstration	. Read: Fractions are Part of Things by Dennis, J. Richard; Gator Pie by Matthews, Louise. . Students are given four small pieces of candy. With a partner, they determine how to equally share the candy between the two of them. The concept of ½ is then related to them. They are then placed into groups of three with six pieces of candy to be equally shared between the three of them. The concept of 1/3 is then related to them. This repeated again in groups of four with twelve pieces of candy. The concept of 1/4 is then related to them. Students determine in which case they received the most, thus

			determining which is the largest fraction. . The students are then asked to display 24 items. They are to distribute the 24 items equally among two containers and orally state that each container contains ½ of the ten items. This is continued with three containers and then with four containers.

Grade Level 1

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.7 Communicate understanding of number sense, properties, and operations through journal writing, creating problems, constructing mathematical sentences, etc..	Students will communicate understanding of number sense, properties, and basic addition and subtraction through journal writing, creating problems, constructing mathematical sentences, etc.	. Teacher observation . Peer and self evaluation . Anecdotal records . Verbal explanation . Dictation . Appropriate response to teacher directed questions . Improved vocabulary . Statewide tests	. See NPO.1.1, NPO.1.2, NPO.1.3, NPO.1.4, NPO.1.5, NPO.1.6 . Students keep a journal of problem solving techniques.

Grade Level_1_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.1 Represent numbers and operations (addition, subtraction, multiplication, and division) in a variety of forms using manipulatives, symbols, and graphs (pictographs, etc.)	Students will represent numbers and basic addition and subtraction (to sums of 18) in a variety of forms using manipulatives, symbols, and graphs.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher directed questions . State-wide test . Teacher-made test . Demonstration	. See NPO.1.0 . Students make a bar graph of the number of students with birthdays in each month. The students then add or subtract combinations of any two bars. . Students represent basic addition and basic subtraction using a number line.
SLE NPO.2.2 Apply elementary number theory (skip counting, patterns, number series, odd and even numbers, multiples, fractions, etc.).	Students will apply elementary number theory (skip counting, patterns, number series, dozen, half dozen, pair, etc.).	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Teacher-made test . Performance	. See NPO.1.1 and NPO.1.3 . Students will count by fives and tens to determine the value of a hand full of dimes and nickels. . Students will continue the pattern for clap in a song. . Students will play games which score points in number series. . Students are presented with 2 or 3 dozen donuts and are asked to describe the amount of donuts (24/36 or 2 dozen/3 dozen). The dozen donuts are then halved by the students and they are asked to describe the amount of donuts in half-dozens. . Students discuss terms for groups of objects/things. Such as a pair of shoes, a couple of dogs, a few

			pencils, etc.

Grade Level 1

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.3 Apply computation (add, subtract, multiply, and divide) and estimation to real-world problems.	Students will apply basic addition, basic subtraction (variety of meanings), and estimation to real-world problems.	. Teacher observation . Peer and self evaluation . Anecdotal records . State-wide test . Teacher-made test . Writing	. Read Ten Apples up on Top by Le Sieg, Theo; Annie's One to Ten by Owen, Annie. . Students estimate how many paper clips would equal the weight of their pencil. They then place their pencil on one side of a balance and the estimated amount of paper clips on the other, then they add or subtract paper clips to find the equal amount for their pencil. The number of paper clips are then counted for the actual answer. . Students guess the number of items in a guessing jar.
SLE NPO.2.4 Use mental math, manipulatives, and technology to solve problems.	Students will use mental math, manipulatives, and technology to solve basic addition and subtraction (variety of meanings) problems.	. Teacher observation . Peer and self evaluation . Teacher-made test . State-wide test . Project	. See NPO.1.1, NPO.1.2 NPO.1.4, NPO.1.6, NPO.2.1 . Students are asked to solve a number of basic addition and subtraction problems either mentally or with manipulatives. They check their answers using a calculator.

Grade Level 1

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.5 Describe and compare quantities by using concrete and real-world models of fractions.	**Students will describe and compare quantities by using concrete and real-world models of the fractions 1/2, 1/3, and 1/4.**	. Teacher observation . Peer and self evaluation . Anecdotal records . Verbal explanation . Journal . Appropriate response to teacher directed questions . Improved vocabulary . Statewide tests . Demonstration . Exhibition	. See NPO.1.6

2rade Level 1

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.1 Sort, classify, and construct geometric shapes/figures using a variety of manipulatives.	**Students will sort and classify geometric shapes/figures using a variety of manipulatives.**	. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration	. Read: Shapes, Shapes, Shapes by Hoban, Tana. . Provide students with geometric shapes represented by a number of objects and allow them to sort them, identify them, and give their reasoning for the grouping.
SLE GS.1.2 Describe, model, draw, construct, compare and classify shapes in one, two, and three dimensions.	**Students will describe shapes in one dimension.** **Students will construct, model, draw, and compare shapes in two-dimensions.** **Students will describe, model, and construct two-dimensional shapes in three-dimensions.**	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Demon-stration . Teacher-made test	. Read: What Comes in Two's, Three's, and Four's by Aker, Suzanne . Students will design a specified model using a variety of shapes. They will draw it (one and two dimensions) and will construct it (three dimensions) using attribute blocks or tangrams or other materials. . Students are given models of three-dimensional figures and are asked to compare them and identify them.

2rade Level 1

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.3 Determine the relationship between shapes/figures using congruence and similarity, and using transformations (flips, slides, and rotations).	Students will determine similar and congruent figures. Students will experience slides, flips, and turns with two- and three-dimensional geometric objects.	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Teacher-made test . Demon-stration	. Students form the geometric shapes with their bodies and recognize that the shapes formed are similar to those on paper. Photographs are taken of the students as these shapes are formed. The photos go in the students' portfolios. . The students cut out colored shapes and glue them on pictures/outlines of the shapes in order to illustrate the concept of congruence. This is placed in the student's portfolio. . Students play with three-dimensional shapes by sliding, flipping, and turning them. . Students make pictures by tracing two-dimensional objects that have been slid, flipped, or turned.
SLE GS.1.4 Predict and determine the results of combining, dividing, and subdividing shapes/figures.	Students will predict the results of combining shapes/figures.	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Project	. Students are asked what shapes/figures would be formed by combining two triangles (right triangles). They are given two right triangles and assess their answers. Students trace the shape/figure formed with the triangles and place these in their portfolio. The activity is repeated using four triangles. A competition is held to see who could form the most shapes/figures. (Could also use other shapes.) . Read: Finding Out About Shapes by Freeman, Mae.

Grade Level 1

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.5 Demonstrate spatial awareness (positional relationship, size, direction, area, volume, etc.).	Students will demonstrate spatial awareness (positional relationship, size, direction, area, etc.).	. Appropriate response to teacher direct questions . Teacher observation . Peer and self evaluation . State-wide test . Demonstration	. Read: The Very Busy Spider by Carle, Eric. . Students are each given a sheet of blank paper. The teacher orally gives directions to construct a drawing using geometric shapes. (Ex. Draw a small circle in the upper right hand corner of your paper. Draw a large square in the lower left hand corner of your paper. etc.)
SLE GS.1.6 Use manipulatives and technology to demonstrate geometric concepts (positional relationship, size, direction, area, volume, etc.).	Students will use manipulatives to demonstrate geometric concepts (positional relationship, size, direction, etc.).	. Teacher observation . Peer and self evaluation . Checklist . State-wide test . Teacher-made test . Demonstration	. See GS.1.5

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GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.7 Demonstrate geometric and spatial sense through written and oral communication (e.g., draw and describe a color cube model using isometric dot paper).	Students will, through written and oral communication, describe three-dimensional objects in terms of two-dimensional shapes.	. Appro-priat response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Portfolio . State-wide test . Teacher-made test . Writing	. See GS.1.3, GS.1.4, GS.1.5, GS.1.6. Have students verbalize responses to teacher's questions. . A display of two or three objects is set up in the class. The students are to write, in complete sentences, a description of each object in the display. This is then place in their portfolio.

Grade Level 1

GEOMETRY AND SPATIAL SENSE

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.1 Estimate and measure the size of geometric figures/shapes in the real world (length, width, perimeter, area, volume, etc.).	Students will measure the size (length and width) of geometric figures/shapes in the real world using non-standard units and standard units (inches, feet, and centimeters).	. Teacher observation . Peer and self evaluation . Anecdotal records . Teacher-made test . State-wide test . Performance . Log or journal	. Read: Shapes, Shapes, Shapes by Hoban, Tana. . Identify various objects in the classroom that represent geometric shapes and determine their size (length and width) using non-standard and standard units of measure. (Ex. A bottom of a box of tissue represents a rectangle or square. The students measure the width and length using a plastic chain to determine how many links long or wide the bottom of the box is, then measure it with a ruler in inches, feet, and centimeters.)
SLE GS.2.2 Construct and explain geometric patterns using concrete and pictorial models, with one or more attributes (color, shape, size, etc.).	Students will construct and explain geometric patterns using concrete and pictorial models, with one attribute.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Demonstration . Project	. Students are presented a pattern using attribute blocks and are asked to explain and continue the pattern. . Students construct their own geometric pattern using attribute blocks and explain the pattern to the teacher.

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GEOMETRY AND SPATIAL SENSE

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.3 Use manipulatives and technology to solve problems involving perimeter, area, volume, etc.	Students will use manipulatives to solve problems involving perimeter, area, and volume.	. Teacher observation . Peer and self evaluation . Anecdotal records . Statewide test . Performance . Teacher-made test	. Students are given colored tiles and a small box. They are to cover the bottom of the box with the tiles without any spaces or overlapping. They count the tiles to determine the area of the bottom of the box. They take the tiles and lay them side by side around the box on the desk. They count them to determine the perimeter of the bottom of the box. . Students are given colored cubes and they keep the box from the previous activity. They are to stack the cubes in the box to completely fill the box. They count the number of cubes needed to fill the box to determine the volume of the box. . Students glue shapes side by side around the outside of the box in order to make a box for storage or for Valentines. The number of shapes that it takes to go around the box represents the perimeter of the box.
SLE GS.2.4 Illustrate geometric concepts through written and oral	Students will, through written and oral communication, describe three-dimensional objects in terms of two-	. Appropriate response to teacher direct	. See GS.2.1, GS.2.2, and GS.2.3. Students will verbalize and/or write their answers to the

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communication. (For example, "I am a rectangular house. My windows are squares. My door is a rectangle. My roof is a triangle.")	dimensional shapes as represented in real life.	questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Portfolio . State-wide test . Teacher-made test . Writing	teacher's questions. The written answers will be placed in their portfolios.

Grade Level 1

MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.1 Demonstrate and apply the concept of comparison (large, small, long, short, etc.) according to a given attribute (color, shape, size, etc.).	Students will demonstrate the concept of comparison (shorter/longer, wider/thinner, hotter/colder, heavier/lighter, etc.) according to two or three attributes (color, size, shape, weight, etc.).	. Teacher observation . Peer and self evaluation . Anecdotal records . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Teacher-made test	. Read: Biggest House in the World by Lionni, Leo. . Extend GS.2.1 and GS.2.3 to allow the students to identify which is longer/shorter or wider/thinner. . Students are given two containers of liquid. One container's liquid is a hotter temperature than the other container's liquid. The amount of liquid in each container is not the same. Have the students weigh them to determine heavier/lighter. Have them also to determine hotter/colder. . Students are asked to compare different measuring tools, such as a ruler and a yard/meter stick or a balance and a scale.
SLE M.1.2 Select, demonstrate, and defend the use of appropriate units of measure.	Students will demonstrate the use of appropriate units of measure for time (day, week, month, year, hour, half hour), length (inches, feet, centimeters), capacity (cups, quarts, gallons), temperature, and money (cents and dollars).	. Teacher observation . Peer and self evaluation . Verbal explanation . Appropriate response to teacher direct questions . Improved vocabulary . Anecdotal records	. See M.1.1 . Students will read a daily calendar and a schedule of activities. . Students will use a clock to determine the proper time for scheduled activities. . Students count out the correct amount of play money for a given price.

		. Checklist . State-wide test . Teacher-made test . Writing	

Grade Level 1

MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.3 Convert from one measurement to another within the same system (feet to yards, centimeters to meters, etc.).	Students will convert from one unit of measurement to another in coins (pennies, nickels, and dimes) and time (7 days = 1 week, 12 months = 1 year).	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct question . Verbal explanation . Improved vocabulary . State-wide test . Demonstration . Teacher-made test	. See M.1.2 . Read: Cookie's Week by Ward, Cindy; Seven Eggs by Hooper, Meredith; The April Rabbits by Cleveland, David; The Very Hungry Caterpillar by Carle, Eric; Clocks and More Clocks by Hutchins, Pat. . Sing songs and recite rhymes to reenforce the days of the week and the months of the year. . Play store. . Students keep a count of days and weeks. . An assigned student is responsible for keeping the class on their activity schedule. (Vary students)

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MEASUREMENT

Standard M.2.0	Benchmarks	Assessments	Strategies/Activities
SLE M.2.1 Select and use appropriate standard (inches, feet), non-standard (paper clip, thumbnail), and metric (centimeter, meter) measuring instruments (e.g., rulers, scales, measuring tape, yard stick, meter stick, thermometer, etc.).	Students will select and use appropriate non-standard and standard measuring instruments to measure length, weight, capacity, time, and temperature.	. Teacher observation . Peer and self evaluation . Anecdotal records . Teacher-made test . State-wide test . Demon-stration . Checklist	. Students are shown an item and are asked specific questions concerned attributes of the item and how the attributes can be measured. (Ex. The teacher holds up a can of soda pop and asks the students how they could find the height, weight, capacity, and temperature of the can and the soda pop.) . Students are given the item and are told to find those specified attributes and determine how much time it takes them to do so.

Grade Level 1

MEASUREMENT

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.1 Estimate and measure quantities such as weight, length, area, volume, money, time, and temperature.	Students will estimate and measure quantities such as weight, length, time, temperature, and capacity in standard and non-standard units. Students will recognize the relative value of a penny, nickel, dime, and quarter and will show how different combinations can have the same value.	. Teacher observation . Peer and self evaluation . Anecdotal records . Checklist . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Demonstration . Log or journal	. Extend M.2.1 by having the students estimate the weight, length, temperature, capacity and time. . Students are given a set of coins and bills and are told to represent a given amount of money in as many ways as possible. (Ex. Represent $0.25 as many ways as possible.)
SLE M.3.2 Solve problems using measuring instruments and technology.	Students will solve problems using standard and non-standard measuring instruments.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Statewide test . Teacher-made test . Writing	. See M.2.1 (Students work with partners or in small groups)

Grade Level_1_

MEASUREMENT

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.3 Pose problems using customary (inches, feet, etc.), non-standard (paper clip, thumbnail, etc.), and metric (centimeters, meters, etc.) measurements in real-world situations.	**Students will orally and in written form pose problems using non-standard measurements in real-world situations.**	. Teacher observation . Peer and self evaluation . Dictation . Portfolio . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Project . Writing . Teacher-made test	. Extend M.3.1 by having students dictate then write a problem in a real-world situation that could be solved using non-standard units of measure. (Ex. Adrian needs to store the left over marshmallows in a bowl, but she doesn't know which of two bowls to use, so she puts items that are approximately the same size as the marshmallows in each bowl to determine which bowl to use.) The written problem will then go into the student's portfolio.

Grade Level 1

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.1.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.1.1 Utilize the scientific method for data analysis. A. Identify the purpose (problem statement) for data collection. B. Make a prediction about the final results of data collected. C. Collect and organize data (tables, graphs, etc.). D. Analyze and interpret data (prediction, inference, conclusion, etc.). E. Display data using appropriate bar graphs, tables, pie graphs, etc., with and without technology.	Students will identify the purpose (problem statement) for data collection (most often, most likely,etc.). Students will make, record, and analyze predictions about the final results of data collection (more/most often, more/most likely, etc.). Students will collect (tally marks, checklist, etc.), organize and display (pictographs, bar graphs, Venn diagrams, etc.) data in a variety of formats (physically, pictorially, and with written symbols).	. Teacher observation . Peer and self evaluation . Performance . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Project . Writing	. Students identify the purpose for data collection (e.g., what TV show is watched the most by the students in the classroom, What is the most likely number of basketball goals a student will make out of 10 atempts, etc.). They predict the final results of the data collection (e.g., more often students watch cartoons than movies, most likely students will make 5 of the 10 basketball goals attempted, etc.). They collect data (e.g., poll the students, count the items, etc.) and organize it (e.g. tally marks, checklist, etc.). They display the data in a variety of formats (e.g. bar graph of TV shows, pictograph of basketball goals made, etc.)
SLE DSP.1.2 Explain the results of data collection using oral and written communication.	Students will orally and pictorially explain the results of data collection.	. Teacher observation . State-wide test . Performance . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary	. Extend DSP.1.1 to have students orally and in writing explain the results of the data collected.

		. Writing . Project	

Grade Level 1

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.2.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.2.1 Predict the results of data collection and demonstrate the concept of chance through the use of manipulatives. (For example: What is the probability of drawing one red marble from a bag of multicolored marbles?)	Students will make and record predictions based on data and develop the concept of chance with manipulatives.	. Teacher observation . Peer and self evaluation . Demonstration . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Log or journal	. See DSP. 1.1 . Students are presented with a bag of red, green, and blue marbles. They are told to predict how many marbles they would have to draw before they had one green, one blue, and one red marble. They draw from the bag until they have one green, one red, and one blue. They record and display the results.
SLE DSP.2.2 Record the results of data collection with a variety of formats that could include charts, graphs, tables, and technology, using oral and/or written communication.	Students will record the results of data collection with a variety of symbolic formats including checklists, tally marks, bar graph, Venn diagrams, etc. using oral and single sentence written communication.	. Teacher observation . Statewide test . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibition . Project . Log or journal	. See DSP.1.2 and DSP.2.1

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DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.1 Predict results, analyze data, and find out why some results are more likely, less likely, or equally likely.	Students will predict results as being more likely, less likely, or equally likely.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Performance . Log or journal	. See DSP. 1.1 . Extend DSP.2.1 to have students predict the likelihood of drawing a red or green marble first.
SLE DSP.3.2 Make a true statement based on a simple concept of average (median, mean, mode, and range) for a small sample size.	Students will orally make a true statement based on the simple concepts of mode (occurs most often), median (middle number in an ordered series), and range (the smallest and largest).	. Teacher observation . Statewide test . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibition . Teacher-made test	. Students will determine who is the smallest in stature and the largest in stature in the class. They will also determine who has about the same height and whose height is represented the most often. They will determine, when the students are lined up in order from shortest to tallest, who is in the middle. . Students are given a series of numbers and are told to determine the mode, median, and range.

Grade Level 1

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.3 Use the tools of technology to assist in gathering, organizing, and presenting information.	**Students will use the tools of technology to assist in presenting information.**	. **Teacher observation** . **Peer and self evaluation** . **Appropriate response to teacher direct questions** . **Verbal explanation** . **Improved vocabulary** . **Exhibition** . **Project** . **Writing**	. **Students will use appropriate computer software such as Math Keys by Houghton Mifflin.** . **Students will view appropriate videos.**

Grade Level 1

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.1 Sort and classify a wide variety of materials.	Students will sort and classify a wide variety of materials using one attribute (color, shape, size, amount, function, etc.).	. Teacher observation . Peer and self evaluation . Anecdotal record . State-wide test . Demonstration . Checklist	. See GS.1.1 . Students will sort attribute blocks according to attributes of their choice. . Students will sort learning materials and place them in their proper places.
SLE PAF.1.2 Describe, extend, and create a wide variety of patterns using concrete models.	Students will describe and extend a wide variety of patterns from one medium to another including symbolic representation (transfer from concrete to pictorial).	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Performance . Checklist	. Extend GS.2.2 to have students copy the pattern on paper.

Grade Level 1

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.3 Demonstrate equality (=) and inequality (<, >) using manipulatives and symbols.	Students will construct equations and inequalities using manipulatives. Students will represent equalities and inequalities pictorially and transfer to symbolic representation using <, >, =.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Demonstration . Teacher-made test	. Using a balance and colored cubes, construct equations. (Ex. Place 2 red blocks in one tray of the balance and place 4 blue blocks in the other tray. Draw 2 red squares and 4 blue squares on their paper. Circle the one that weighs the most. Write the number 2 under the red squares and the number 4 under the blue squares and place the correct inequality sign between the numbers.)
SLE PAF.1.4 Demonstrate the beginning concept of a variable. (Use boxes, letter, or other symbols to stand for any number or object in simple situations, with or without concrete material, such as 6 + ___ = 8 or 3 + B = 4, etc.).	Students will orally and symbolically furnish an answer for an unknown that will form a true mathematical statement. (e.g., 6 + ___ = 8)	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Teacher-made test . Statewide test . Demonstration	. Extend PAF.1.3 to determine how many blocks need to be added to the side of the balance that weighs the least to make the weights equal. (Ex. 2 red blocks need to be placed with the 2 red blocks already on the balance in order to equal the weight of the 4 blue blocks.) . Reenforce basic addition facts by rewriting in the "benchmark" given form. (2 + ___ = 4)

Grade Level 1

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.5 Express mathematical relationships in one and two dimensions. (Length x Width = Area, L x W = A, etc.)	Students will express mathematical relationships in one and two dimensions (e.g., 7 days = 1 week, 7 days = 1 wk.; 12 months = 1 year, 12 mos. = 1 yr.; etc.).	. Teacher observation . Peer and self evaluation . Journal . Teacher-made test . State-wide test . Perform-ance	. Assign a writing assignment for the students' journals and have them express as much as possible in correct abbreviated form. . Students will be assigned mathematical abbreviations as an extension to weekly spelling tests. . Students are given the two-dimensional relationship (abbreviation) and are asked to write the one-dimensional relationship (no abbreviation).
SLE PAF.1.6 Use oral and/or written communication to interpret created patterns.	Students will pictorially and orally communicate to interpret a wide variety of created patterns from one medium to another.	. Teacher observation . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Teacher-made test . Perform-ance . Writing	. See PAF.1.2

Mathematics Checklist for First Grade

Student Name:			
COMPETENCIES	Introduced	Progressing	Proficient
Number Sense, Properties, and Operations			
Combine quantities to 20; explore relationships among combinations of a number			
Count and represent quantities up to 100 using drawings and objects; count on from a given number			
Read and write numbers up to 100			
Use objects to show tens and ones place value			
Estimate quantities up to 100			
Use ordinal numbers			
Use the calculator as a mathematical tool			
Develop and use strategies to count and combine objects			
Organize collections of objects to make them easy to count and combine (ex: arrange objects in a rectangular array or in equal size sets)			
Develop and use strategies (including manipulatives) to solve addition and subtraction problems			
Record strategies for solving problems using words, drawings, numbers, and equations			
Create a story problem to match an addition sentence			
Know single-digit addition pairs (facts)			
Add a list of single-digit numbers			
Describe measurements using fractions: halves, thirds, and fourths			
Geometry and Spatial Sense			
Identify shapes in the surroundings; identify and describe attributes of various objects			
Draw, describe, and compare 2-dimensional shapes (in terms of size, shape, and orientation)			
Construct (from 2-dimensional shapes), describe, and compare 3-dimensional shapes and their characteristics			
Arrange shapes according to rotation (turn) and reflection (flip)			
Categorize objects or shapes according to common characteristics; according to a rule			
Recognize someone else's categorizing/sorting rule			
Follow, give, and record (write) directions for moving along a path			
Combine and subdivide shapes to create other shapes; use shapes to fill a space			

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Mathematics Checklist for First Grade, Page 2

	Introduced	Progressing	Proficient
Measurement			
Measure, compare, and order lengths using non-standard units			
Estimate length			
Measure and compare capacities using non-standard units (ex: stacking cubes in a container); describe as *holds more, holds less*			
Estimate capacity			
Compare weights using a balance; describe weights as *lighter, heavier*			
Ask questions that can be answered by measuring			
Recognize coins and tell their values; combine coins to be equivalent to another coin			
Use a calendar to identify days and months; name yesterday, today, and tomorrow			
Tell time by hour and half hour			
Data, Probability, and Statistics			
Make a plan for gathering data			
Collect, record, sort and categorize data			
Invent and construct a clear representation of data (using tables, graphs, and diagrams)			
Explain and interpret results of data collection; understand a data display			
Tell which event occurs most often			
Make a prediction about an event happening			
Patterns, Algebra, and Functions			
Recognize and describe (orally and in writing) patterns of number			
Represent the same pattern in different ways (objects, movement, drawings, numbers)			
Identify patterns in geometric objects; create geometric patterns			
Identify the missing piece in a sequence; predict the next item in a sequence			
Name whole number that comes before, after, or between given whole numbers			
Fill in an unknown in an addition or a subtraction sentence			
Compare quantities using *more than, less than, equal to*			
Skip count by 2, 5, and 10			
Skip count using the calculator			

Comments:

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